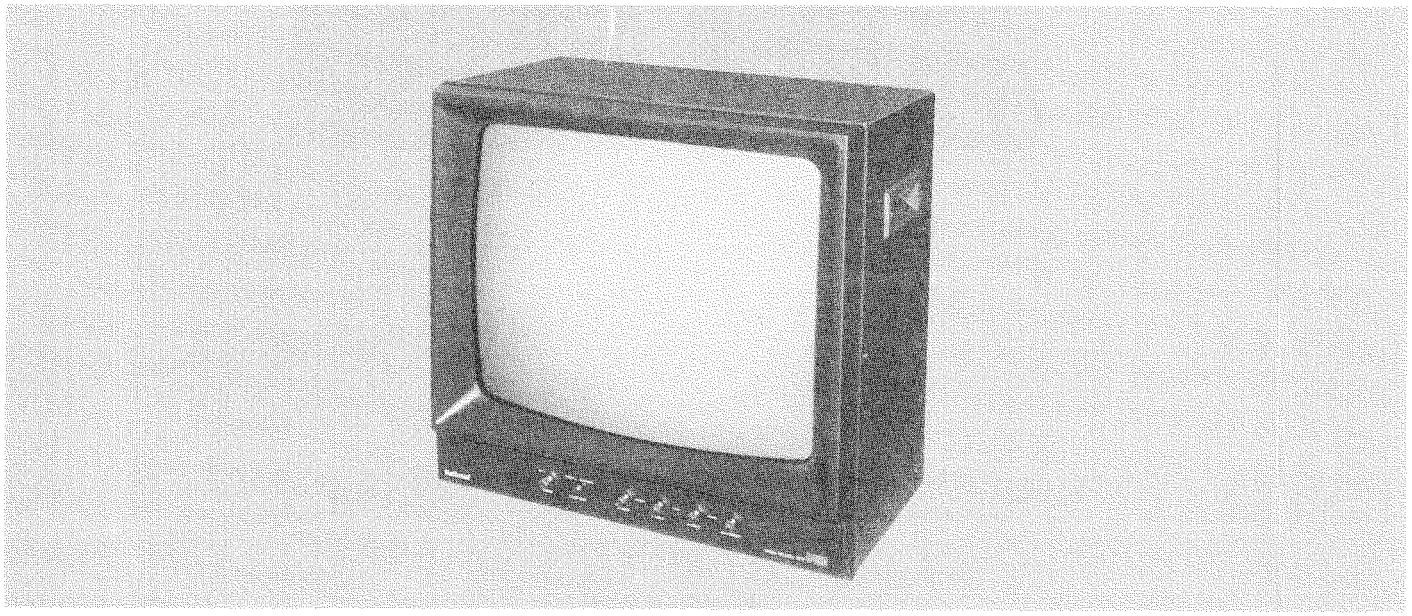
ORDER NO. VKD84060844C8

Service Manual

Video Monitor

WV-5490



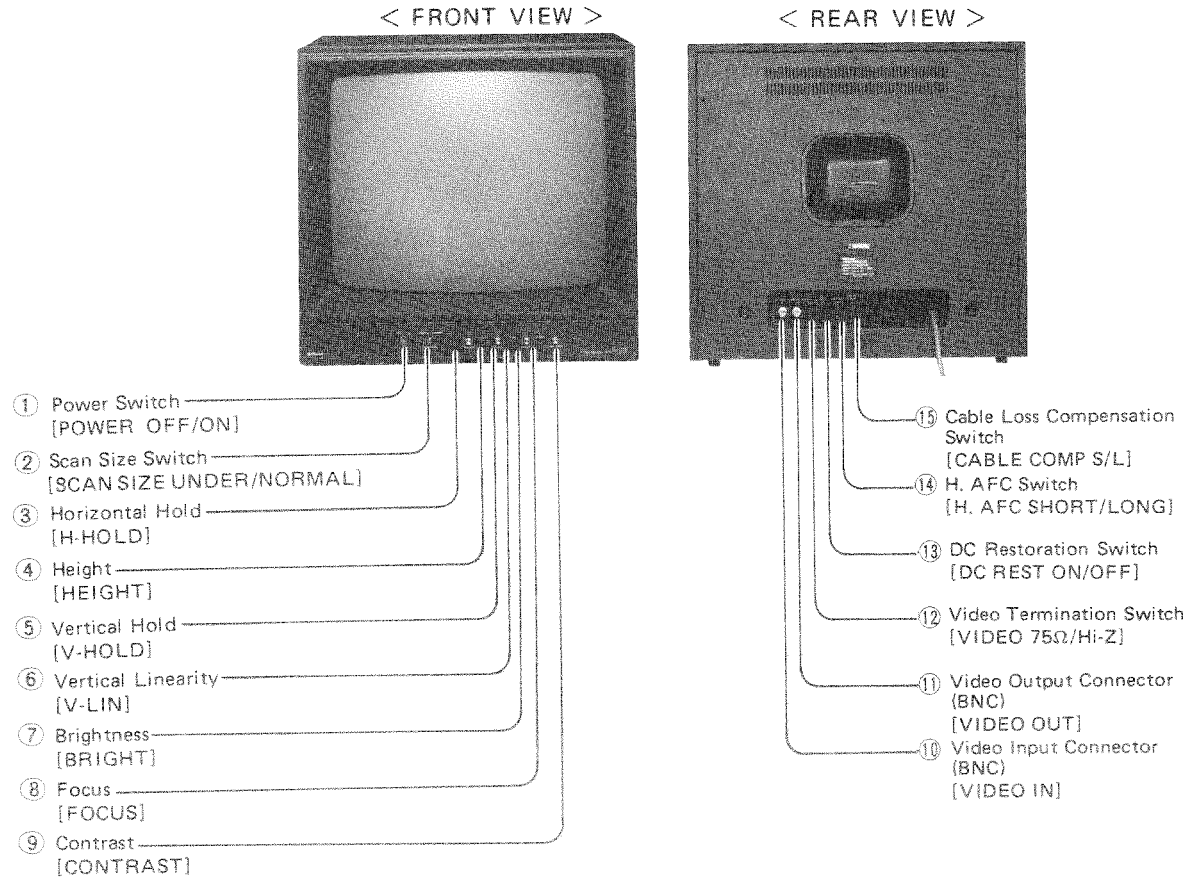
SPECIFICATIONS

Power Source:	WV-5490N/A 240V AC, 50 Hz WV-5490/B 240V AC,50Hz WV-5490N/C 220V AC, 50 Hz WV-5490/C.G 220V AC,50Hz WV-5490N 115V or 230V AC resetable, 50/60 Hz
Power Consumption:	Approx. 70 watts
Video Input:	0.5~2.0 Vp-p composite/75Ω or Hi-Z looping through
Video Frequency Response:	More than 10 MHz
Horizontal Resolution:	More than 850 lines at center
Maximum Video Gain:	42 dB
H. AFC Time Constant:	Short time constant for industrial VTRs
Sweep Linearity:	Less than 10% at overscan
Sweep Geometry:	Less than 2% at overscan
Overscanning:	Approx. 5%
Scanning Size:	Overscan or underscan switchable
DC Restoration:	Yes
CRT:	20" diagonal (18-5/8" diagonal actual visual size)
High Voltage:	DC 16kV
Rackmounting:	Yes (with optional rack angle brackets)
Ambient Operating Temperature:	−10°C ~ +50°C
Ambient Operating Humidity:	Less than 90%
Dimensions:	483 (W) x 450.5 (H) x 378 (D) mm
Weight:	18.5Kg

National/Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

MAJOR OPERATING COMPONENTS


< FRONT VIEW >
< REAR VIEW >
① Power Switch [POWER OFF/ON]
② Scan Size Switch [SCAN SIZE UNDER/NORMAL]
③ Horizontal Hold [H-HOLD]
④ Height [HEIGHT]
⑤ Vertical Hold [V-HOLD]
⑥ Vertical Linearity [V-LIN]
⑦ Brightness [BRIGHT]
⑧ Focus [FOCUS]
⑨ Contrast [CONTRAST]
⑮ Cable Loss Compensation Switch [CABLE COMP S/L]
⑭ H. AFC Switch [H. AFC SHORT/LONG]
⑬ DC Restoration Switch [DC REST ON/OFF]
⑫ Video Termination Switch [VIDEO 75Ω/Hi-Z]
⑪ Video Output Connector (BNC) [VIDEO OUT]
⑩ Video Input Connector (BNC) [VIDEO IN]

CONTROLS AND THEIR FUNCTIONS

① Power Switch [POWER OFF/ON]
Turns power ON and OFF.

② Scan Size [SCAN SIZE UNDER/NORMAL]
Underscanning is obtained when depressed.

③ Horizontal Hold [H-HOLD]
Locks in the picture horizontally.

④ Height [HEIGHT]
Adjust the height of the picture.

⑤ Vertical Hold [V-HOLD]
Locks in the picture vertically.

⑥ Vertical Linearity [V-LIN]
Adjusts for vertical distortion of the picture.

⑦ Brightness Control [BRIGHT]
Turning this control clockwise increases the overall brightness.

⑧ Focus [FOCUS]

⑨ Contrast Control [CONTRAST]
Turning this control clockwise increases the picture contrast.

⑩ Video Input Connector [VIDEO IN] (BNC)

⑪ Video Output Connector [VIDEO OUT] (BNC)

⑫ Video Termination Switch [VIDEO 75Ω/Hi-Z]
When bridging or looping through the video signal, set this switch to Hi-Z position, and for other cases this switch should be set to 75Ω position.

⑬ DC restoration Switch [DC REST ON/OFF]
Switch to restore background of the picture.

⑭ H. AFC Switch [H. AFC SHORT/LONG]
Switch to SHORT position (short H. AFC time constant) for VTR playback.

⑮ Cable Loss Compensation Switch
See page 2.

CONNECTIONS

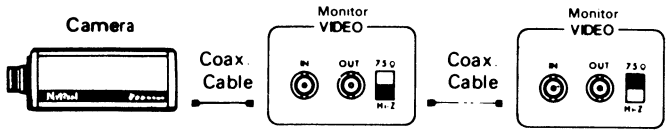
Power Cable

1. Keep the Monitor Power Switched OFF during connection.
2. Connect the Power Cord to a grounded electrical outlet.

Video Cable

1. Terminate the camera's output in a 75-ohm resistor at the furthest end of its cable run.

- Always set the last monitor's Termination Switch ⑫ to **75Ω**, and set the Termination Switches ⑫ of intermediate monitors to **Hi-Z.**



- Use 75-ohm coaxial cable. (3C-2V, 5C-2V, 7C-2V, 10C-2V)

2. Up to 10 monitors can be hooked up in this configuration before signal loss occurs. Total cable length should not exceed 150m.

3. Wiring Precautions:

- Do not bend coaxial cable into a curve whose radius is smaller than 10 times its diameter.
- Never staple the cable – not even with circular staples.
- Never crush or pinch the cable.

All these will change the impedance of the cable and cause poor picture quality.

Cable Loss Compensation Switch

1. Normally set this switch to **S** position.

2. When the cable is so long that the resolution deteriorates, select the appropriate coaxial cable and switch position according to the cable length as shown in the table.

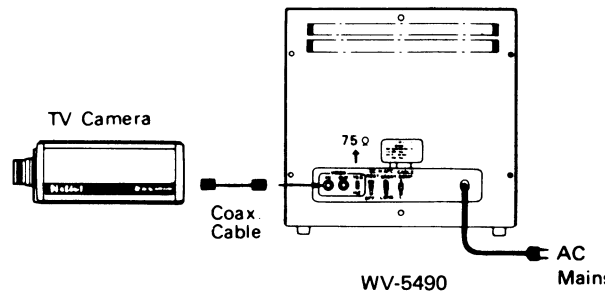
(Unit: m)

Position of Switch \ Kinds of Cable	3C-2V	5C-2V	7C-2V	10C-2V
S (Short)	250	500	600	800
L (Long)	500	750	1000	1250

3. A thicker coaxial cable is preferred and switch position **S** is most appropriate.
4. If many monitors are to be bridge-connected, choose the cable by the distance to the last monitor, and select the switch position of each monitor so that the best picture quality can be obtained.

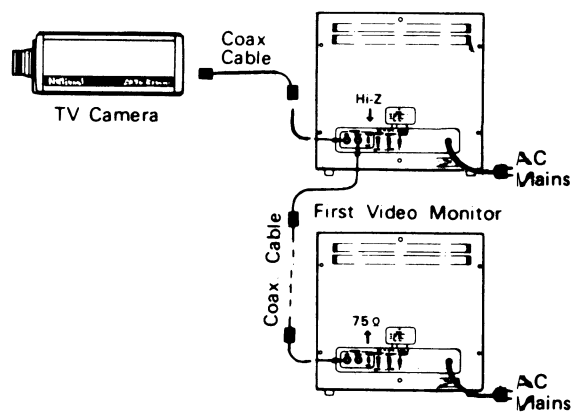
System Connections

1. Single Monitor Connection



- Connect the Video Input Connector ⑩ on the monitor to the Video Out Connector of the camera with 75-ohm coaxial cable.
- Set the Video Termination Switch ⑫ to **75Ω** position.

2. Multiple Monitor Connection



- Connect the Video Input Connector ⑩ on the video monitor to the Video Out Connector of the camera with 75-ohm coaxial cable.
- Connect the Video Output Connector ⑪ on the first monitor to the Video Input Connector ⑩ on the second monitor with 75-ohm coaxial cable. Continue until all monitors are connected.
- Set the Video Termination Switch ⑫ of the first and intermediate monitors to **Hi-Z** position. Then set the Video Termination Switch ⑫ of the last monitor to **75Ω** position.

ADJUSTMENT

■ TEST EQUIPMENT

- TV camera or Video Signal Generator
- Coaxial Cable (Impedance: 75Ω)
- Resolution Chart (YWV1400RB99)

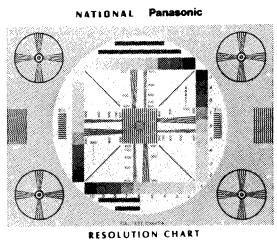


Fig. 1

■ SET UP FOR ADJUSTMENT

1) Adjustment using TV camera

- Connect the coaxial cable between the TV camera and the input of video monitor.
- Terminate the video input of monitor with 75 ohms.
- Position the resolution chart (YWV1400RB99) in front of the TV camera as shown in Fig. 2.

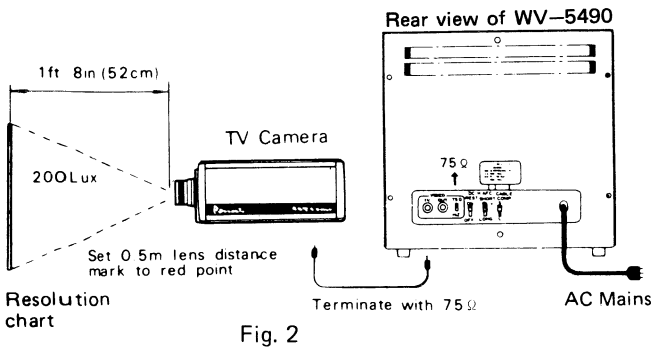


Fig. 2

2) Adjustment using video signal generator

- Connect the coaxial cable between the output of video signal generator and the input of video monitor.
- Set the video signal generator so that it provides the cross-hatch signal.

■ DISASSEMBLING FOR ADJUSTMENT

- Remove eight screws fixing the rear cover and remove the cover.(Fig. 3)

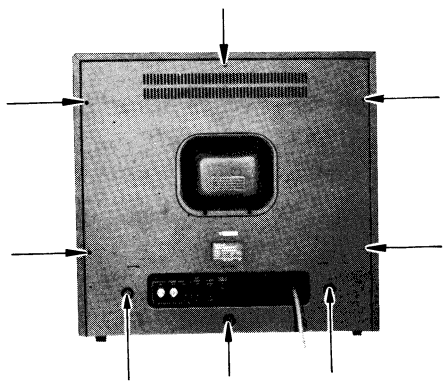


Fig. 3

→ Remove the screws.

■ ADJUSTMENT PROCEDURE

- Refer to page 5 for adjusting controls.
- Observe the monitor screen during the adjustment.

1. Vertical hold adjustment

Adjusts:	VR201 (V.HOLD)
	VR9 (V. SUB HOLD)

- Set V.HOLD VR201 to hold the picture verically.

2. Horizontal hold adjustment

Adjusts:	VR204 (H. HOLD)

- Set H.HOLD VR204 to picture horizontally.
- Adjust H. SUB HOLD VR10 to hold picture horizontally.

3. Picture tilt adjustment

Adjust:	Deflection coil

- Set the scan size switch to the underscan position.
- Loosen the deflection coil holding screw. (Fig. 4)

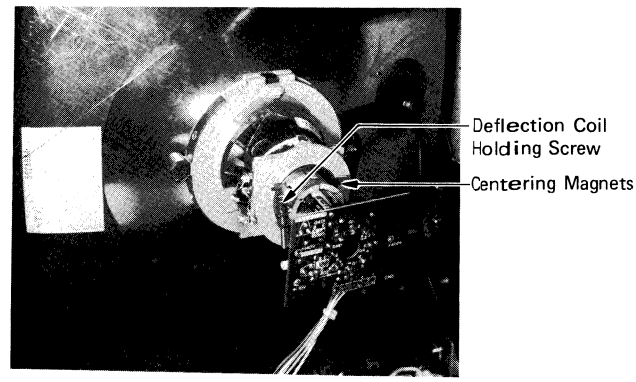


Fig. 4

- Turn the deflection coil until the raster on the monitor screen is straight.
- Carefully tighten the deflection coil holding screw.

4. Centering adjustment

Adjust:	Centering magnets

- Keep setting the scan size switch to the underscan position.
- Adjust the centering magnets (see Fig. 4) until the raster comes to the center of monitor screen.

5. Horizontal width adjustment

Adjust:	L204 (H-WIDTH)

- Set the scan size switch to the normal (overscan) position.
- Adjust H-WIDTH L204 to obtain full horizontal width plus a little overscanning.

6. Vertical height and linearity adjustment

Adjusts:	VR203 (HIGHT) VR207 (V-LIN)

- Adjust HEIGHT VR203 and V-LIN VR207 so that the circuit in the chart is nearly a true circle.

7. Sub-brightness adjustment

Adjusts:	VR101 (CONTRAST) VR205 (BRIGHTNESS) VR401 (SUB-BRIGHTNESS)

- Set the DC restoration switch to the ON position.
- Turn CONTRAST VR101 fully counterclockwise.
- Turn BRIGHTNESS VR205 fully clockwise, and then turn it back 90 degrees counterclockwise.
- Adjust SUB-BRIGHTNESS VR401 so that the raster will just appear.

8. Focus adjustment

Adjust:	VR206 (FOCUS)

- Adjust VR206 for best focus in the monitor.

9. Spot Killer adjustment

Adjust:	VR402 (SPOT KILLER)

- Set SPOT KILLER VR402 at mechanical center.

■ VIDEO/DEFLECTION CIRCUIT BOARD REMOVAL

- When replacing the parts on the video/deflection circuit board, proceed following steps.

(1) Remove konbs from the front of the monitor.
(2) Remove four screws which are shown in Fig. 5.

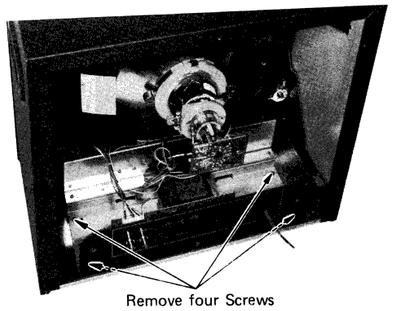


Fig. 5

- The video/deflection circuit board can be removed backward. (Fig. 6)

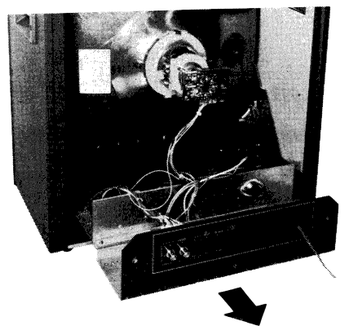
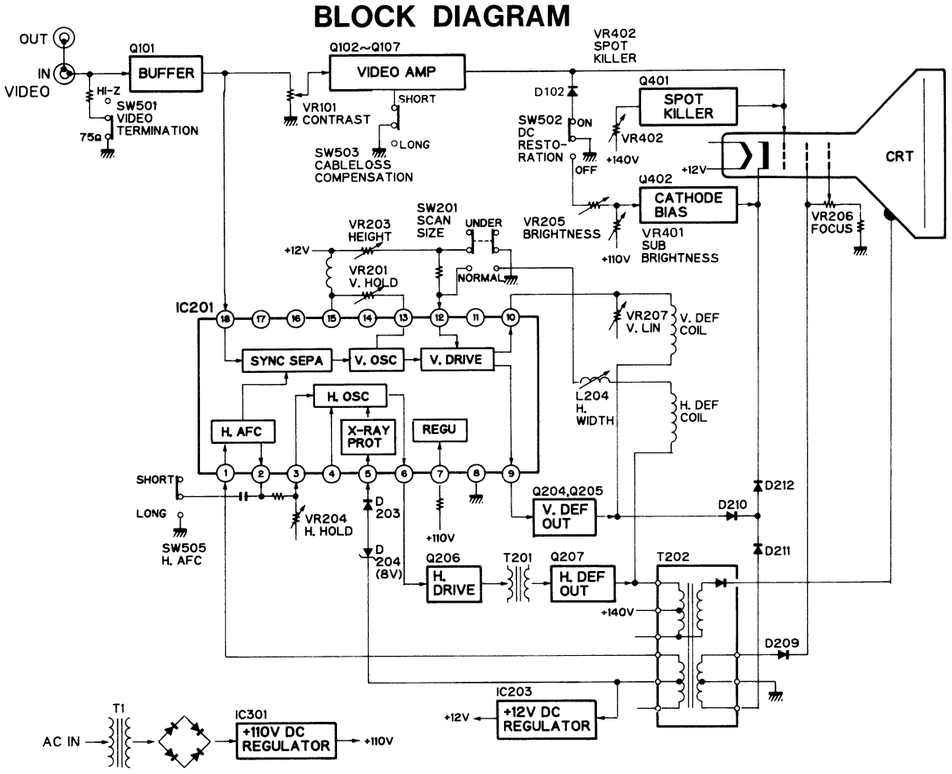
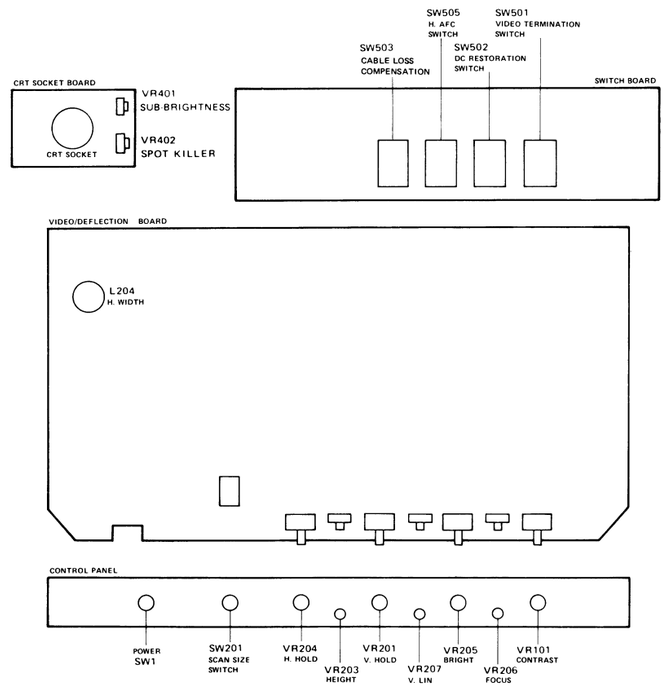


Fig. 6

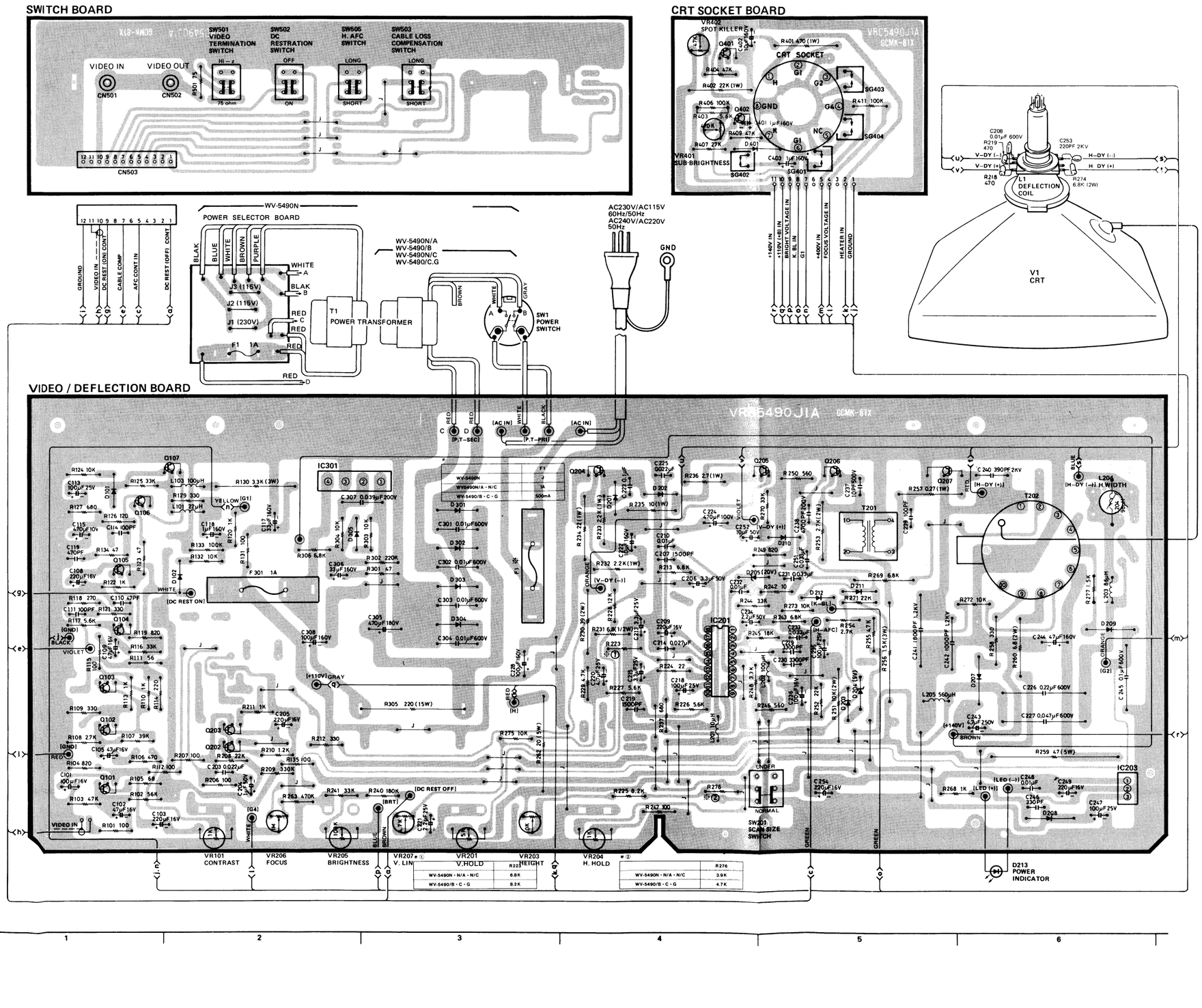
BLOCK DIAGRAM



LOCATION OF ADJUSTING CONTROLS



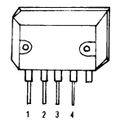
CONDUCTOR VIEW AND WIRING DIAGRAM



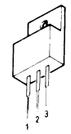
VIDEO/DEFLECTION BOARD

IC201	AN5435	B4	D211	0A91	B5
IC203	NJM7812A	A6	D212	0A91	B5
IC301	STR3110	C2	D213	LN21RPH	A6
Q101	2SD636-RS	A1	D301	RM2C	C3
Q102	2SD636-RS	B1	D302	RM2C	B3
Q103	2SB641-RS	B1	D303	RM2C	B3
Q104	2SD636-RS	B1	D304	RM2C	B3
Q105	2SD636-RS	B1	D305	YUDRM-1	C3
Q106	2SD636-RS	C1			
Q107	2SC2258	C2			
Q202	2SB641-RS	A2			
Q203	2SD636-RS	B2	**CRT SOCKET BOARD**		
Q204	2SD772AB	C4	Q401	2SA1018A	E4
Q205	2SD772AB	C4	Q402	2SA1018A	E4
Q206	2SC2653	C5	D401	RU2C	D4
Q207	2SD1142	C5			
D101	MA150	C1			
D102	0A91	B2			
D201	MA150	C4			
D202	MA150	C4			
D203	MA27A	B5			
D204	HZ9A-2	B5			
D205	HZ20-2	B4			
D207	RU1C	B6			
D208	YUDRU2M	A6			
D209	RU1C	B6			
D210	RU1C	B5			

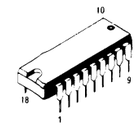
STR3110



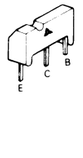
NJM7812P



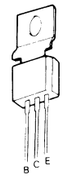
AN5435



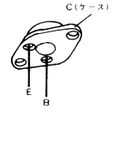
2SB641-RS
2SD636-RS



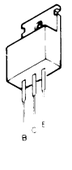
2SC2653



2SD1142

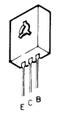


2SD772AB

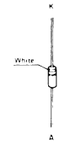


2SA1018A

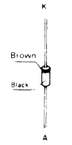
2SC2258



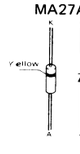
MA150



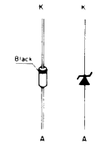
YUDRU2M



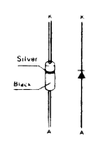
OA91
MA27A



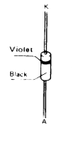
HZ9A-2
HZ20-2



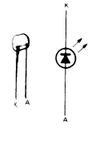
RM2C
YUDRU2M



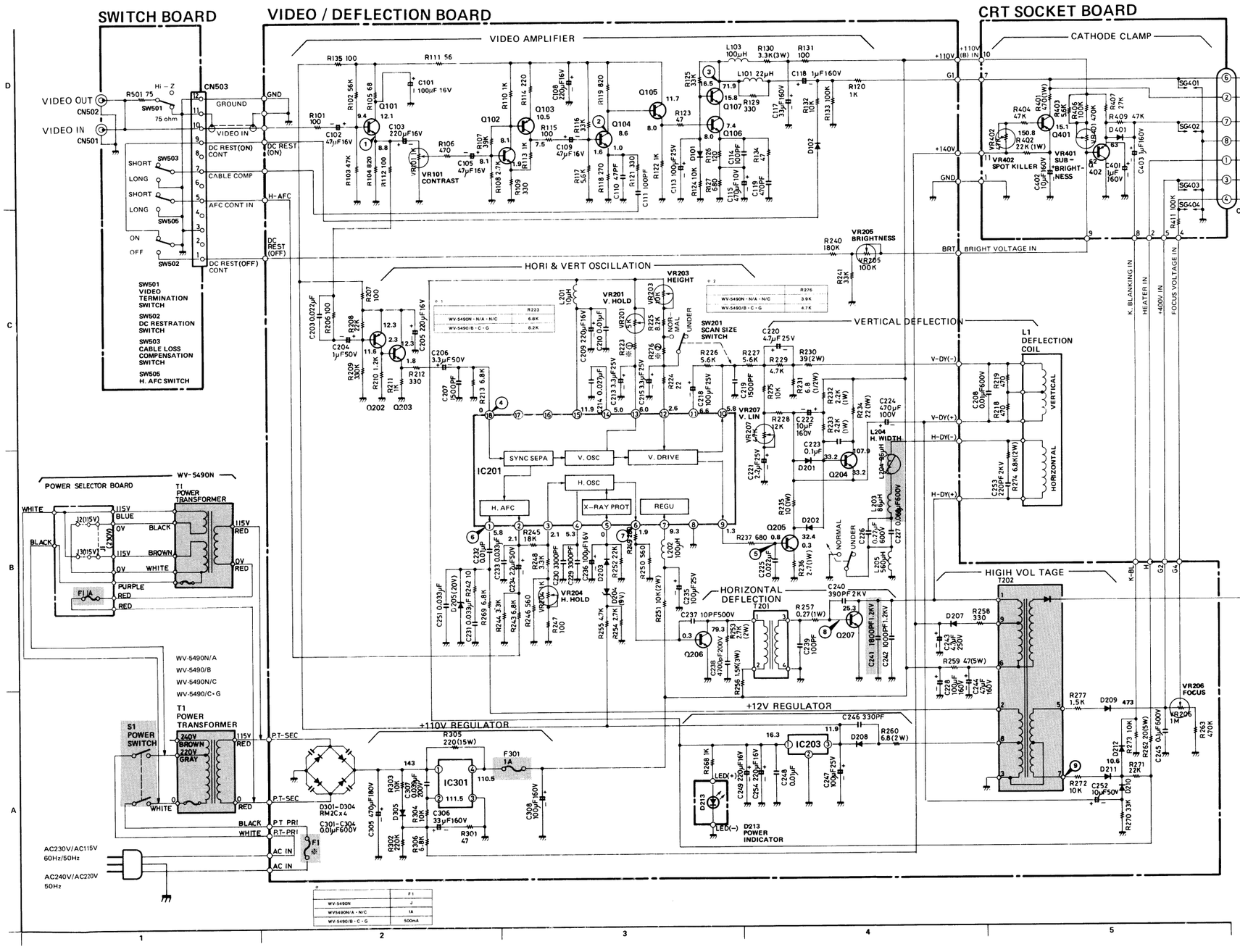
RU1C



LN21RPH



SCHEMATIC DIAGRAM



PRODUCT SAFETY NOTE

The shaded area on this schematic diagram incorporates special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

VIDEO/DEFLECTION BOARD

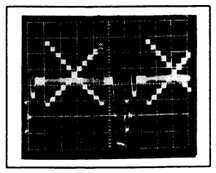
IC201	AN5435	B3
IC203	NJM7812A	A4
IC301	STR3110	A2
Q101	2SD636-RS	D2
Q102	2SD636-RS	D3
Q103	2SB641-RS	D3
Q104	2SD636-RS	D3
Q105	2SD636-RS	D3
Q106	2SD636-RS	D3
Q107	2SC2258	D3
Q202	2SB641-RS	C2
Q203	2SD636-RS	C2
Q204	2SD772AB	B4
Q205	2SD772AB	B4
Q206	2SC2653	B3
Q207	2SD1142	B4
D101	MA150	D3
D102	0A91	D4
D201	MA150	B4
D202	MA150	B4
D203	MA27A	B3
D204	HZ9A-2	B3
D205	HZ20-2	B2
D207	RU1C	B4
D208	YUDRU2M	A4
D209	RU1C	A5
D210	RU1C	A5
D211	0A91	A5
D212	0A91	A5
D213	LN21RPH	A3
D301	RM2C	A2
D302	RM2C	A2
D303	RM2C	A2
D304	RM2C	A2
D305	YUDRM-1	A2

CRT SOCKET BOARD

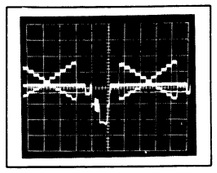
Q401	2SA1018A	D5
Q402	2SA1018A	D5
D401	RU2C	D5

SIGNAL WAVEFORMS

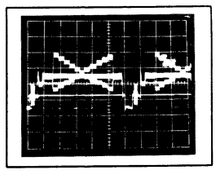
① 0.1V/DIV, 10μs/DIV



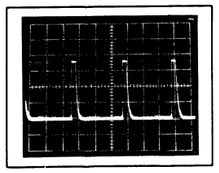
② 0.2V/DIV, 10μs/DIV



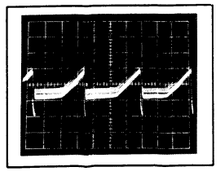
③ 5V/DIV, 10μs/DIV



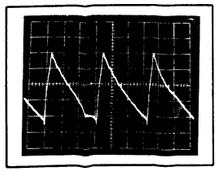
④ 20V/DIV, 20μs/DIV



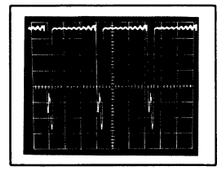
⑤ 0.5V/DIV, 5ms/DIV



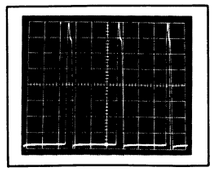
⑥ 0.2V/DIV, 20μs/DIV



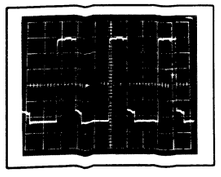
⑨ 20V/DIV, 20μs/DIV



⑧ 100V/DIV, 20μs/DIV



⑦ 1.0V/DIV, 20μs/DIV

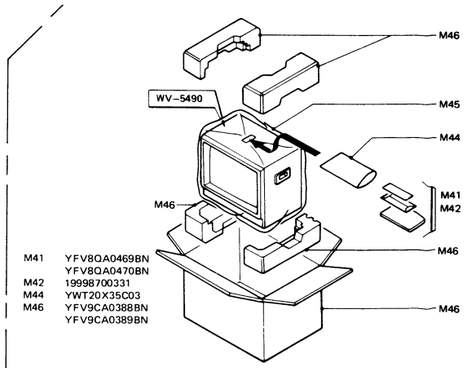


EXPLODED VIEW OF VIDEO MONITOR

PCB1	YFVK85490N1A
	YFVK85490E1A
PCB2	YFVK5490N1A
	YFVK5490E1A
PCB3	YFVK05490N1A
	YFVK05490E1A
V1	500AGB4
L1	YFTMD-1108
T1	YFPHE76V010A
	YFPHE76V011A
F1	YWST6-1A
CN1,2	YWBNC-R
E1	XCA4007
	YWHBS-3-08
	YWCE0099-08F
	YWVM0099-08
E2	YWSN5051
E4	YWTH028
M1	YFV58A0015B1
M2	YFV5WA0147A2
	YFV5WB0147A2
M3	YWV5350HR01
M4	YWV5350HR02
M5	YWV5350HR03A
M6	YFS40176
M7	YFV2SA0122A4
M8	YFV1KA0020A4
M9	YFV4JA0070A4
M10	YFV2KA0077A2
M11	YWS-WB02
M12	YFV7MA0029A4
M13	YWS-XEGRB03
M14,15	YFV2VA0001A4
M16	YFV2KA0078B2
M17	YFV5EA0193AS
M18	YFV68A0010A2
M19	YWSR5N4
	YWSR6W-1
M20	YFV5KA0041AS
M21	YFV6AA0007A3
M22	YW8-N8T
M23	YFV70A0483B4
	YFV70A0484B4
M24	YVZC700RB50
M25	YFV1KA0019A4
M26	YWS-XULRB05
M27	YFV7MA0099A4
M28	YWS-CULRB03
M29	YFV7MA0086A4
M30	YFV7MA0103A4
M31	YWS-F0ORB05
	YFV7MA0088A4
M32	YFV7DA0017A4
M33	YFV2CA0007A4
M34	YFV7DA0016A3
M35	YW-BCG-EM01.

No.	SCREWS	DESCRIPTION
①	XBS2.6+4FXK	Binding Head Black Screw
②	XSB3+4FX	Binding Head Screw
③	XSB3+6FX	Binding Head Screw
④	XSB3+6FXK	Binding Head Black Screw
⑤	XSB3+8FX	Binding Head Screw
⑥	XYN3+A12FX	Machine Screw and Waser Ass'y
⑦	XSB4+6FX	Binding Head Screw
⑧	XSB4+10FX	Binding Head Screw
⑨	XSB4+10FXK	Binding Head Black Screw
⑩	XYN5+C10FX	Machine Screw and Washer Ass'y
⑪	XYN6+C16FX	Machine Screw and Washer Ass'y1
⑫	XWC5C	External Toothed Look Washer

PACKAGING



M41	YFV8QA0469BN	
	YFV8QA0470BN	
M42	19998700331	
M44	YWT20X35C03	
M46	YFV9CA0388BN	
	YFV9CA0389BN	

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. Components identified by * mark are new parts used from this model.
3. Complete printed circuit board assembly is not available as replacement part.

MODEL WV-5490N/WV-5490/BCG

SYM-BOL NO.		PART NO.	DESCRIPTION	
VIDEO MONITOR MISCELLANEOUS				
V1	⚠*	500AGB4	Cathode Ray Tube	
R218,219		ERD25FJ471	Carbon	470 ohms 1/4W
R274		ERG2ANJ682	Metal	6.8K ohms 2W
C208		ECQM6103KZ	Plastic	0.01 uf 600V
C253		ECKD3D221KB	Ceramic	220 pF 2KV
L1		YFTMD-1108	Deflection Coil	
T1	⚠*	YFPHE76V010A	Power Transformer for WV-5490N	
	⚠*	YFPHE76V011A	Power Transformer for WV-5490/BCG	
F1	⚠	YWST6-1A	Current Fuse 1A for WV-5490N	
E1	⚠	XCA4007	AC Power Cord Socket for WV-5490N	
	⚠	YWHBS-3-08	AC Power Cord for WV-5490/B	
	⚠	YWCE0099-08F	AC Power Cord for WV-5490/C	
	⚠	YWVM0099-08	AC Power Cord for WV-5490/G	
E2		YWSN5051	Fuse Holder for WV-5490N	
E4		YWTM028	Terminal	
CN1, 2		YWBNC-R	BNC Connector	
M1	*	YFV5BA0015B1	Front Escutcheon	
M2	*	YFV5WA0147A2	Operation Panel for WV-5490/BCG	
		YFV5WB0147A2	Operation Panel for WV-5490N	
M3		YWV5350HR01	Knob A	
M4		YWV5350HR02	Knob B	
M5		YWV5350HR03	Push Button	
M6	*	YFS40176	Nut Plate	
M7	*	YFV2SA0122A4	Mounting Angle for CRT	
M8	*	YFV1KA0020A4	Washer B for CRT	
M9	*	YFV4JA0070A4	Mounting Spring for CRT	
M10	*	YFV2KA0077A2	Main Chassis	
M11		YWS-WB02	Rubber Foot	
M12	⚠	YFV7MA0029A4	X-Ray Label for WV-5490/G	
M13	⚠	YWS-XEGRB03	Safety Label for WV-5490/G	
M14,15	*	YFV2VA0001A4	Mounting Angle for BNC Connector	
M16	*	YFV2KA0078B2	Rear Chassis	
M17	*	YFV5EA0193A2	Rear Cover Assy	
M18		YFV6BA0010A2	Hood	
M19		YWSR5N4	Cord Clamp for WV-5490N	
		YWSR6W-1	Cord Clamp for WV-5490/BCG	
M20	*	YFV5KA0041AS	Upper Case Assy	
M21		YFV6AA0007A3	Handle	
M22		YW8-NBT	National Label for WV-5490N	
M23	⚠*	YFV7QA0483B4	Main Label for WV-5490/BCG	
	⚠*	YFV7QA0484B4	Main Label for WV-5490N	
M24		YVZC700RB50	Serial No. Label	
M25	*	YFV1KA0019A4	Washer A for Front Escutcheon	
M26		YWV1000NUR2	Voltage Label for WV-5490N	
M27	⚠	YFV7MA0099A4	UL Caution Label	
M28	⚠	YWS-CULRB03	Fuse Change Label	
M29	⚠	YFV7MA0086A4	Serviceman Label	
M30	⚠	YFV7MA0103A4	Shock Label	
M31	⚠	YFV7MA0088A4	Fuse Label for WV-5490N	
M35	⚠	YW-BCG-EM01	Earth Lug	
YFVKB5490N1A for WV-5490N YFVKB5490E1A for WV-5490/BCG VIDEO/DEFLECTION BOARD				
PCB1	*	YFVKB5490N1A	Printed Circuit Board Assy	
	*	YFVKB5490E1A	Printed Circuit Board Assy	
IC201		AN5435	IC	
IC203		NJM7812A	IC	
IC301		STR3110	IC	
Q101,102		2SD636-RS	Transistor	
Q103		2SB641-RS	Transistor	
Q104-106		2SD636-RS	Transistor	
Q107		2SC2258	Transistor	
Q202		2SB641-RS	Transistor	
Q203		2SD636-RS	Transistor	
Q204,205		2SD772AB	Transistor	
Q206		2SC2653	Transistor	
Q207		2SD1142	Transistor	
D101		MA150	Diode	
D102		0A91	Diode	
D201,202		MA150	Diode	
D203		MA27A	Diode	
D204		HZ9A-2	Diode	
D205		HZ20-2	Diode	
D207		RU1C	Diode	
D208		YUDRU2M	Diode	
D209,210		RU1C	Diode	
D211,212		0A91	Diode	
D213		LN21RPH	LED	
D301-304		RM2C	Diode	
D305		YUDRM-1	Diode	
R101		ERD25FJ101	Carbon	100 ohms 1/4W
R102		ERD25FJ563	Carbon	56K ohms 1/4W
R103		ERD25FJ473	Carbon	47K ohms 1/4W
R104		ERD25FJ821	Carbon	820 ohms 1/4W

MODEL WV-5490N/WV-5490/BCG

SYM-BOL NO.	PART NO.	DESCRIPTION		SYM-BOL NO.	PART NO.	DESCRIPTION	
R105	ERD25FJ680	Carbon	68 ohms 1/4W	R235	ERG1ANJ100	Metal	10 ohms 1W
R106	ERD25FJ471	Carbon	470 ohms 1/4W	R236	ERX1ANJ2R7	Metal	2.7 ohms 1W
R107	ERD25FJ393	Carbon	39K ohms 1/4W	R237	ERD25FJ681	Carbon	680 ohms 1/4W
R108	ERD25FJ272	Carbon	2.7K ohms 1/4W	R240	ERD25FJ114	Carbon	110K ohms 1/4W
R109	ERD25FJ331	Carbon	330 ohms 1/4W				
				R241	ERD25FJ333	Carbon	33K ohms 1/4W
R110	ERD25FJ102	Carbon	1K ohms 1/4W	R242	ERD25FJ100	Carbon	10 ohms 1/4W
R111	ERD25FJ560	Carbon	56 ohms 1/4W	R243	ERD25FJ682	Carbon	6.8K ohms 1/4W
R112	ERD25FJ101	Carbon	100 ohms 1/4W	R244	ERD25FJ332	Carbon	3.3K ohms 1/4W
R113	ERD25FJ102	Carbon	1K ohms 1/4W	R245	ERD25FJ183	Carbon	18K ohms 1/4W
R114	ERD25FJ221	Carbon	220 ohms 1/4W				
				R246	ERD25FJ561	Carbon	560 ohms 1/4W
R115	ERD25FJ101	Carbon	100 ohms 1/4W	R247	ERD25FJ101	Carbon	100 ohms 1/4W
R116	ERD25FJ333	Carbon	33K ohms 1/4W	R248	ERD25FJ332	Carbon	3.3K ohms 1/4W
R117	ERD25FJ562	Carbon	5.6K ohms 1/4W	R249	ERD25FJ821	Carbon	820 ohms 1/4W
R118	ERD25FJ271	Carbon	270 ohms 1/4W	R250	ERD25FJ561	Carbon	560 ohms 1/4W
R119	ERD25FJ821	Carbon	820 ohms 1/4W				
				R251	ERG2ANJ103	Metal	10K ohms 2W
R120	ERD25FJ102	Carbon	1K ohms 1/4W	R252	ERD25FJ223	Carbon	22K ohms 1/4W
R121	ERD25FJ331	Carbon	330 ohms 1/4W	R253	ERG2ANJ272	Metal	2.7K ohms 2W
				R254	ERN55EF2701	Metal	2.7K ohms 1/8W
R122	ERD25FJ102	Carbon	1K ohms 1/4W	R255	ERN55EF4701	Metal	4.7K ohms 1/8W
R123	ERD25FJ470	Carbon	47 ohms 1/4W				
R124	ERD25FJ103	Carbon	10K ohms 1/4W	R256	ERG3ANJ152	Metal	1.5K ohms 3W
				R257	ERX1ANJR27	Metal	0.27 ohms 1W
R125	ERD25FJ333	Carbon	33K ohms 1/4W	R258	ERG12ANJ331	Metal	330 ohms 1/2W
R126	ERD25FJ121	Carbon	120 ohms 1/4W	R259	ERF5AJ470	Solid	47 ohms 5W
R127	ERD25FJ681	Carbon	680 ohms 1/4W	R260	ERX2ANJ6R8	Metal	6.8 ohms 2W
R129	ERD25FJ331	Carbon	330 ohms 1/4W				
R130	ERG3ANJ332	Metal	3.3K ohms 3W	R262	ERF5AJ200	Solid	20 ohms 5W
				R263	ERD25FJ474	Carbon	470K ohms 1/4W
R131	ERD25FJ101	Carbon	100 ohms 1/4W	R268	ERD25FJ102	Carbon	1K ohms 1/4W
R132	ERD25FJ103	Carbon	10K ohms 1/4W	R269	ERD25FJ682	Carbon	6.8K ohms 1/4W
R133	ERD25FJ104	Carbon	100K ohms 1/4W	R270	ERD25FJ333	Carbon	33K ohms 1/4W
R134	ERD25FJ470	Carbon	47 ohms 1/4W				
R135	ERD25FJ101	Carbon	100 ohms 1/4W	R271	ERD25FJ223	Carbon	22K ohms 1/4W
				R272,273	ERD25FJ103	Carbon	10K ohms 1/4W
R206,207	ERD25FJ101	Carbon	100 ohms 1/4W	R275	ERD25FJ103	Carbon	10K ohms 1/4W
R208	ERD25FJ223	Carbon	22K ohms 1/4W	R276	ERD25FJ392	Carbon	3.9K ohms 1/4W for WV-5490N
R209	ERD25FJ334	Carbon	330K ohms 1/4W		ERD25FJ472	Carbon	4.7K ohms 1/4W for WV-5490/BCG
R210	ERD25FJ122	Carbon	1.2K ohms 1/4W				
				R277	ERD25FJ152	Carbon	1.5K ohms 1/4W
R211	ERD25FJ102	Carbon	1K ohms 1/4W	R278	ERG12ANJ102	Metal	1K ohms 1/2W
R212	ERD25FJ331	Carbon	330 ohms 1/4W	R301	ERD25FJ470	Carbon	47 ohms 1/4W
R213	ERD25FJ682	Carbon	6.8K ohms 1/4W	R302	ERD25FJ224	Carbon	220K ohms 1/4W
				R303,304	ERD25FJ103	Carbon	10K ohms 1/4W
R223	ERD25FJ682	Carbon	6.8K ohms 1/4W for WV-5490N				
				R305	ERF15ZXK221	Metal	220 ohms 15W
	ERD25FJ822	Carbon	8.2K ohms 1/4W for WV-5490/BCG	R306	ERD25FJ682	Carbon	6.8K ohms 1/4W
				VR101	EVH0TAS20B13	Variable Resistor	1K ohms
				VR201	EVH0TAS20B53	Variable Resistor	5K ohms
R224	ERD25FJ220	Carbon	22 ohms 1/4W	VR203	YFSR29D10KB	Variable Resistor	10K ohms
R225	ERD25FJ822	Carbon	8.2K ohms 1/4W				
R226,227	ERD25FJ562	Carbon	5.6K ohms 1/4W	VR204	EVH0TAS20B13	Variable Resistor	1K ohms
				VR205	EVH0TAS20B15	Variable Resistor	100K ohms
R228	ERD25FJ123	Carbon	12K ohms 1/4W	VR206	YFSR29D1MB	Variable Resistor	1M ohms
R229	ERD25FJ472	Carbon	4.7K ohms 1/4W	VR207	YFSR29D4.7KB	Variable Resistor	4.7K ohms
R230	ERG2ANJ390	Metal	39 ohms 2W	C101	ECEA1CS101	Electrolytic	100 µF 16V
				C102	ECEA1CS470	Electrolytic	47 µ F 16V
R231	ERX12ANJ6R8	Metal	6.8 ohms 1/2W	C103	ECEA1CS221	Electrolytic	220 µF 16V
R232,233	ERG1ANJ222	Metal	2.2K ohms 1W	C105	ECEA1CS470	Electrolytic	47 µ F 16V
R234	ERG1ANJ220	Metal	22 ohms 1W	C108	ECEA1CS221	Electrolytic	220 µF 16V
				C109	ECEA1CS470	Electrolytic	47 µ F 16V

SYM-BOL NO.	PART NO.	DESCRIPTION	
C110	ECCF1H470JC	Ceramic	47 pF
C111	ECCF1H101JC	Ceramic	100 pF
C112	ECEA1CS221	Electrolytic	220 µF 16V
C113	ECEA1ES101	Electrolytic	100 µF 25V
C114	ECQM1H102KZ	Plastic	100 pF 50V
C115	ECEA1AS471	Electrolytic	470 µF 10V
C117	ECEA2CS330	Electrolytic	33 µF 160V
C118	ECEA2CS010	Electrolytic	1 µF 160V
C119	ECCW1H471J	Ceramic	470 pF 50V
C203	ECQM1H223KZ	Plastic	0.022 µF 50V
C204	ECEA1HS010	Electrolytic	1 µF 50V
C205	ECEA1CS221	Electrolytic	220 µF 16V
C206	ECEA1HS3R3	Electrolytic	3.3 µF 50V
C207	ECQM1H152KZ	Plastic	1500 pF 50V
C209	ECEA1CS221	Electrolytic	220 µF 16V
C210	ECQM1H103KZ	Plastic	0.01 µF 50V
C213	ECSF1EE335	Electrolytic	3.3 µF 25V
C214	ECQM1H273KZ	Plastic	0.027 µF 50V
C215	ECSF1EE335	Electrolytic	3.3 µF 25V
C218	ECEA1ES101	Electrolytic	100 µF 25V
C219	ECQM1H152KZ	Plastic	1500 pF 50V
C220	ECSF1EE475	Electrolytic	4.7 µF 25V
C221	ECSF1EE225	Electrolytic	2.2 µF 25V
C222	ECEA2CS100	Electrolytic	10 µF 160V
C223	ECQM1H104KZ	Plastic	0.1 µF 50V
C224	ECEA2AS471	Electrolytic	470 µF 100V
C225	ECQM1H223KZ	Plastic	0.022 µF 50V
C226	ECQF6224KZ	Plastic	0.22 µF 600V
C227	ECQF6683KZH	Plastic	0.068 µF 600V
C228	ECEA2CS101	Electrolytic	100 µF 160V
C229,230	ECQP1332GZ	Plastic	3300 pF 100V
C231	ECQM1H333KZ	Plastic	0.033 µF 50V
C232	ECQM1H103KZ	Plastic	0.01 µF 50V
C233	ECQM1H333KZ	Plastic	0.033 µF 50V
C234	ECEA1HS2R2	Electrolytic	2.2 µF 50V
C235	ECEA1ES101	Electrolytic	100 µF 25V
C236	ECEA1CS101	Electrolytic	100 µF 16V
C237	ECFD2H100K	Ceramic	10pF 500V
C238	ECQM2472KZ	Plastic	4700 pF 200V
C239	ECCF1H101JC	Ceramic	100 pF 50V
C240	ECKD3D391KB	Ceramic	390 pF 2KV
C241 ⚠	ECWH12H182KR	Plastic	1800 pF 1.2KV
C242	ECWH12H102KR	Plastic	1000 pF 1.2KV
C243	ECEA2ES4R7	Electrolytic	4.7 µF 250V
C244	ECEA2CS470	Electrolytic	47 µF 160V
C245	ECQF6104KZ	Plastic	0.1 µF 600V
C246	ECCF1H331J	Ceramic	330 pF 50V
C247	ECEA1ES101	Electrolytic	100 µF 25V
C248	ECQM1H103KZ	Plastic	0.01 µF 50V

SYM-BOL NO.	PART NO.	DESCRIPTION	
C249	ECEA1CS221	Electrolytic	220 µF 16V
C251	ECQM1H333KZ	Plastic	0.033 µF 50V
C252	ECEA1HS100	Electrolytic	10 µF 50V
C254	ECEA1CS221	Electrolytic	220 µF 16V
C301-304	ECQM6103KZ	Plastic	0.01 µF 600V
C305	ECET2PR471SW	Electrolytic	470 µF 180V
C306	ECEA2CS330	Electrolytic	33 µF 160V
C307	ECQM2393KZ	Plastic	0.039 µF 200V
C308	ECEA2CS101	Electrolytic	100 µF 160V
L101	YWFL5H-220K	Coil	22µH
L103	YWFL5H-101K	Coil	100 µH
L201	YWFL5H100K	Coil	10µH
L202	YWFL5H-101K	Coil	100 µH
L203 ⚠	ELH5L137	Coil	86µH
L204 ⚠	ELH16G904	Coil	96µH
L205	ELC18B001	Coil	560µH
T201	TLH6434	Low Freq Transformer	
T202 ⚠	TMF2304	Flyback Transformer	
SW1 ⚠	EVQ3BMK20	Power Switch	
SW201	YW1F01AC312	Slide Switch	
F1 ⚠	XBA2C05ET0A	Current Fuse	500mA for WV-5490/BCG
F301 ⚠	XBA2C10ET0A	Current Fuse	1A for WV-5490/BCG
⚠	YWST6-1A	Current Fuse	1A for WV-5490N
E2	YWSN5051	Fuse Holder for WV-5490N	
	YWSN5053	Fuse Holder for WV-5490/BCG	
E3	YFSN005001	LED Holder	
E4	YWTM028	Terminal	
M31	YWS-F00RB05A	Fuse Label for WV-5490/BCG	
M32 *	YFV7DA0017A4	Heat Sink for IC	
M33 *	YFV2CA0007A4	Hold Plate	
M34 *	YFV7DA0016B3	Heat Sink for Transistor	

YFVKC5490N1A for WV-5490N
YFVKC5490E1A for WV-5490/BCG
CRT SOCKET BOARD

PCB2	* YFVKC5490N1A	Printed Circuit Board Assy for	WV-5490N
	* YFVKC5490E1A	Printed Circuit Board Assy for	WV-5490/BCG
Q401,402	2SA1018A	Transistor	
D401	RU2C	Diode	
R401	ERG1ANJ471	Metal	470 ohms 1W
R402	ERG1HNJ223	Metal	22K ohms 1W
R403	ERD25FJ562	Carbon	5.6K ohms 1/4W
R404	ERD25FJ473	Carbon	47K ohms 1/4W
R406	ERD25FJ104	Carbon	100K ohms 1/4W
R407	ERD25FJ273	Carbon	27K ohms 1/4W

SYM-BOL NO.	PART NO.	DESCRIPTION
R409	ERD25FJ104	Carbon 100K ohms 1/4W
VR401	YFSR29D470KB	Variable Resistor 470K ohms
VR402	YFSR29R47KB	Variable Resistor 470K ohms
C401	ECEA2CS010	Electrolytic 1 µF 160V
C402	ECEA2CS100	Electrolytic 10 µF 160V
C403	ECEA2CS010	Electrolytic 1 µF 160V
SG401-404	YFAG20PC122F	Spark Gap
CN401	YFS8503B03	CRT Socket

YFVKD5490N1A for WV-5490N
YFVKD5490E1A for WV-5490/BCG
SWITCH BOARD

PCB3	* YFVKD5490N1A	Printed Circuit Board Assy
	* YFVKD5490E1A	Printed Circuit Board Assy
R501	ERD25FJ750	Carbon 75 ohms 1/4W
SW501,502	YWSSC-322A	Slide Switch
SW503,504	YWSSC-322A	Slide Switch
SW505	YWSSC-322A	Slide Switch
SW506	YWSSC-322A	Slide Switch
CN101-JM	EMCS1250ML	12 pin Jack Male

ACCESORY PARTS/PACKAGING PARTS

M41	* YFV8QA0469BN	Operating Instructions for WV-5490N
	* YFV8QA0470BN	Operating Instrucitons for WV-5490/BCG
M42	19998700331	Warranty Card for WV-5490/B
M44	YWT20X35C03	Bag
M46	* YFV9CA0388BN	Packaging for WV-5490/BCG
	* YFV9CA0389BN	Packaging for WV-5490/N

SYM-BOL NO.	PART NO.	DESCRIPTION

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